NEST JS

Duration: 2 days
Prerequisites: Knowledge of JavaScript and Node.js

Day 1: Core Fundamentals of NestJS and Application Structure

Module 1: Introduction to NestJS

- What is NestJS?
- Why use NestJS over Express?
- Architecture overview: Controllers, Providers, Modules
- Nest CLI and project structure

Module 2: Setting Up a New Project

- Installing Nest CLI
- Creating a new project
- Exploring project files and folder structure
- Running the application in development mode

Module 3: Controllers and Routing

- Creating controllers
- Route handling (GET, POST, PUT, DELETE)
- Route parameters and query strings
- Using DTOs for request validation
- **Lab**: Create a sample UsersController to handle basic CRUD endpoints

Module 4: Providers and Dependency Injection

- Creating services
- Injecting services into controllers
- Custom providers
- Singleton pattern in NestJS
- **Lab**: Build a UsersService and inject into controller

Module 5: Modules and Application Architecture

- Creating and importing modules
- Feature modules and shared modules
- Global modules
- **Lab**: Modularize the user feature

Day 2: Intermediate Features, Database, and Deployment

Module 6: Data Validation and Exception Handling

- Using class-validator and class-transformer
- Pipes for validation
- Built-in and custom exceptions
- Global exception filters

- **Lab**: Add validation to user DTOs and handle bad input gracefully

Module 7: Middleware, Interceptors & Guards

- Middleware for request logging
- Interceptors for response transformation and logging
- Guards for basic auth checks
- **Lab**: Implement a simple logging middleware and guard

Module 8: Connecting to a Database with TypeORM

- Installing TypeORM and PostgreSQL (or SQLite)
- Setting up a database connection
- Creating and using Entities
- Repositories and basic queries
- **Lab**: Connect UserService to database and perform CRUD using repository

Module 9: Intro to Testing and Postman Integration

- Unit testing basics with Jest
- Writing test cases for services and controllers
- Using Postman to test APIs

Module 10: Deployment of NestJS Application

- Preparing app for production (build process)
- Setting environment variables
- Deployment on:
    - Heroku (via CLI)
    - Render / Railway (via GitHub integration)
- **Lab**: Deploy sample NestJS app